

WHAT IS CLAIMED IS:

- 1 1. A tape drive for use with magnetic tapes, the tape drive
2 comprising:
3 a housing for receiving a magnetic tape having multiple parallel
4 tracks;
5 a tape head for reading and writing the parallel tracks of the magnetic
6 tape, wherein reading the parallel tracks produces a data signal for each track;
7 a plurality of partial response maximum likelihood (PRML)
8 equalization/detection channels for processing the data signals to determine the data
9 stream for each data signal;
10 wherein the plurality of PRML equalization/detection channels
11 includes at least one PRML equalization/detection channel pre-assigned to each
12 track; and
13 wherein the plurality of PRML equalization/detection channels further
14 includes at least one floating PRML equalization/detection channel dynamically
15 assignable on an as-needed basis.
- 1 2. The tape drive of claim 1 wherein there are at least two PRML
2 equalization/detection channels assigned to each track.
- 1 3 The tape drive of claim 1 wherein there are sixteen parallel
2 tracks processed at a time.
- 1 4. The tape drive of claim 1 wherein there are thirty-two parallel
2 tracks processed at a time.
- 1 5. The tape drive of claim 1 wherein a floating PRML
2 equalization/detection channel is dynamically assigned based on current per-track
3 performance.
- 1 6. The tape drive of claim 5 wherein current per-track
2 performance for a particular track is determined based on error rate.

1 7. The tape drive of claim 1 wherein a floating PRML
2 equalization/detection channel is pre-assigned to a default track based on an
3 expectation of per-track performance.

1 8. The tape drive of claim 7 wherein a track at the tape edge is
2 pre-assigned a floating PRML equalization/detection channel.

1 9. The tape drive of claim 1 wherein the PRML
2 equalization/detection channels are contained in a single application specific
3 integrated circuit (ASIC).

1 10. An application specific circuit (ASIC) for use in a tape drive,
2 the tape drive including a housing for receiving a magnetic tape having multiple
3 parallel tracks and a tape head for reading and writing the parallel tracks of the
4 magnetic tape, wherein reading the parallel tracks produces a data signal for each
5 track, the ASIC comprising:

6 a plurality of partial response maximum likelihood (PRML)
7 equalization/detection channels for processing the data signals to determine the data
8 stream for each data signal;

9 wherein the plurality of PRML equalization/detection channels
10 includes at least one PRML equalization/detection channel pre-assigned to each
11 track; and

12 wherein the plurality of PRML equalization/detection channels further
13 includes at least one floating PRML equalization/detection channel dynamically
14 assignable on an as-needed basis.

1 11. The ASIC of claim 10 wherein there are at least two PRML
2 equalization/detection channels assigned to each track.

1 12. The ASIC of claim 10 wherein there are sixteen parallel tracks
2 processed at a time.

1 13. The ASIC of claim 10 wherein there are thirty-two parallel
2 tracks processed at a time.

1 14. The ASIC of claim 10 wherein a floating PRML
2 equalization/detection channel is dynamically assigned based on current per-track
3 performance.

1 15. The ASIC of claim 14 wherein current per-track performance
2 for a particular track is determined based on error rate.

1 16. The ASIC of claim 10 wherein a floating PRML
2 equalization/detection channel is pre-assigned to a default track based on an
3 expectation of per-track performance.

1 17. The ASIC of claim 16 wherein a track at the tape edge is pre-
2 assigned a floating PRML equalization/detection channel.

1 18. A drive for use with media, the drive comprising:
2 a housing for receiving a medium having multiple parallel tracks;
3 a head for reading and writing the parallel tracks of the medium,
4 wherein reading the parallel tracks produces a data signal for each track;
5 a plurality of partial response maximum likelihood (PRML)
6 equalization/detection channels for processing the data signals to determine the data
7 stream for each data signal;
8 wherein the plurality of PRML equalization/detection channels
9 includes at least one PRML equalization/detection channel pre-assigned to each
10 track; and
11 wherein the plurality of PRML equalization/detection channels further
12 includes at least one floating PRML equalization/detection channel dynamically
13 assignable on an as-needed basis.

1 19. The drive of claim 18 wherein the PRML
2 equalization/detection channels are contained in a single application specific
3 integrated circuit (ASIC).

1 20. A partial response maximum likelihood (PRML) method for
2 handling parallel tracks wherein reading the tracks produces a plurality of data
3 signals, and wherein a plurality of partial response maximum likelihood (PRML)
4 equalization/detection channels are provided for processing the data signals to
5 determine the data stream for each data signal, the method comprising:

6 pre-assigning at least one PRML equalization/detection channel to
7 each track; and

8 dynamically assigning at least one floating PRML
9 equalization/detection channel on an as-needed basis.

1 21. The method of claim 20 wherein a floating PRML
2 equalization/detection channel is dynamically assigned based on current per-track
3 performance.

1 22. The method of claim 21 wherein current per-track
2 performance for a particular track is determined based on error rate.

1 23. The method of claim 20 wherein a floating PRML
2 equalization/detection channel is pre-assigned to a default track based on an
3 expectation of per-track performance.

1 24. The method of claim 23 wherein a track at the tape edge is
2 pre-assigned a floating PRML equalization/detection channel.